Latrobe LSS™ 4140 Alloy Steel (AISI 4140)

Categories: Metal; Ferrous Metal; Alloy Steel; Carbon Steel; Medium Carbon Steel; Tool Steel

Material Notes: TLS 4140 and 4142HT are versatile, alloy steels which are used in variety of tooling and other industrial applications. TLS 4140 is the classic AISI 4140 alloy steel which is sold in the annealed condition at a hardness less than or equal to 217 HBW. TLS 4142HT is a similar steel which is sold prehardened to 28 to 32 HRC (269 to 302 HBW). Pieces of TLS 4142HT which are greater than about 3 inches (76.2mm) in thickness typically exhibit a lower hardness in the central region of the cross section. Typical applications for these steels include break dies, bending dies, support tooling, die holders, gears, flanges, collets, arbors, spindles, axles, clutch parts, forming rolls, wrenches and other hand tools, and various machine tool components.

Information Provided by Timken Latrobe Steel.

Timken sold Latrobe in December 2006. They are now Latrobe Specialty Steels Co.

Vendors: No vendors are listed for this material. Please click here if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Specific Gravity	7.83 g/cc	7.83 g/cc	
Density	7.83 g/cc	0.283 lb/in³	

Chemical Properties	Metric	English	Comments
Critical Temperature	260 °C	500 °F	Mf
	343 °C	649 °F	Ms
	680 °C	1260 °F	Ar1
	732 °C	1350 °F	Ac1
	743 °C	1370 °F	Ar3
	804 °C	1480 °F	Ac3

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	27	27	Oil Quenched from 843°C; 649°C Temper Temperature
	60	60	Oil Quenched from 843°C; As Quenched
Modulus of Elasticity	200 GPa	29000 ksi	
Machinability	60 - 65 %	60 - 65 %	1% Carbon Steel

Thermal Properties	Metric	English	Comments
CTE, linear	12.22 µm/m-°C @Temperature 21.0 - 100 °C	6.789 µin/in-°F @Temperature 69.8 - 212 °F	
Thermal Conductivity	37.7 W/m-K @Temperature 300 °C	262 BTU-in/hr-ft²-°F @Temperature 572 °F	
	42.3 W/m-K @Temperature 200 °C	294 BTU-in/hr-ft²-°F @Temperature 392 °F	
	42.7 W/m-K @Temperature 100 °C	296 BTU-in/hr-ft²-°F @Temperature 212 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.40 %	0.40 %	
Chromium, Cr	1.0 %	1.0 %	
Iron, Fe	97.15 %	97.15 %	
Manganese, Mn	1.0 %	1.0 %	
Molybdenum, Mo	0.20 %	0.20 %	
Silicon, Si	0.25 %	0.25 %	